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10/674,808	10/01/2003	Koichi Otsuki	Q77778	8787

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EXAMINER

FIDLER, SHELBY LEE

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,808	OTSUKI, KOICHI	
	Examiner	Art Unit	
	Shelby Fidler	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 12 and 13 recite the limitation "the ink cartridge" in line 2. There is insufficient antecedent basis for this limitation in the claims. For the purpose of rejection, Examiner assumes that this limitation should read "the ink cartridges."

Claims 20-24 are objected to because of the following informalities: these claims recite the limitation of "a first position adjustment value." This limitation is confusing since Examiner is unsure whether this is limitation is different from the "first position adjustment value" which was disclosed in parent claim 18. If this is the same "first position adjustment value," please change these recitations to "the first position adjustment value." Appropriate correction is required. Similar objections apply to the limitations of "a second position adjustment value."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8-11, 16-20, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (US 6532026 B2) in view of Saijo (US 6293647 B2).

Regarding claims 1 and 9:

Takahashi et al. disclose a printing apparatus (Fig. 5) comprising a print head (print head 1) that has a plurality of nozzle groups each including a plurality of nozzles for ejecting an identical color (col. 16, lines 31-40), the printing apparatus having a bi-directional printing function of performing main scanning for moving the print head relative to a printing medium (col. 1, lines 13-19) and sub scanning for moving the print head relative to the printing medium in a direction that transverses a direction of the main scanning (col. 1, lines 49-57), and ejecting ink from nozzles onto the printing medium on each of forward passes and backward passes of the main scanning of bi-directional movement to form dots on the printing medium (col. 1, lines 13-19), the printing apparatus comprising:

a position adjustment value storage (memory 107) that stores a position adjustment value (adjustment data) for reducing misalignments of dot forming positions between forward passes and backward passes of main scanning (col. 17, lines 32-36);

a position adjuster (controller 100) that adjusts dot forming positions along the main scanning direction during the bi-directional printing based on the position adjustment value stored in the position adjustment storage (e.g. flowchart of Fig. 16);

an ink cartridge mount (e.g. carriage unit 2, Fig. 5) that can mount one or more ink cartridges thereon (col. 15, lines 8-11), the one or more ink cartridges having ink tanks each containing ink to be supplied to each of the nozzle groups (col. 15, lines 50-55);

the printing apparatus can use a first ink set (head1 from col. 42, lines 52-56 uses black, cyan, magenta, and yellow inks, col. 15, lines 50-55) and a second ink set (head2 uses black, light cyan, and light magenta, col. 42, lines 61-63) that have mutually different combinations of available inks (only head2 uses LC and LM; col. 42, lines 52-66);

the printing apparatus can use a first bi-directional print mode (print mode using head1; col. 42, lines 52-54) that selectively uses inks included in the first ink set (col. 16, lines 1-7) and a second bi-directional print mode (print mode using head2, col. 16, lines 1-7) that selectively uses inks included in the second ink set (col. 42, lines 61-63) so that a combination of inks used in the first bi-directional print mode is different from a combination of inks used in the second bi-directional print mode (only head2 uses LC and LM; col. 42, lines 52-66);

the position adjustment value storage (107) can store a plurality of position adjustment values (col. 17, lines 32-36) including a first position adjustment value for the first bi-directional print mode (col. 42, lines 55-61) and a second position adjustment value for the second bi-directional print mode (col. 42, line 61 - col. 43, line 5); and

the position adjustment unit (100) selects a position adjustment value for a bi-directional print mode used by the printing apparatus out of the plurality of position adjustment values to adjust dot forming positions (col. 43, lines 33-41).

Takahashi et al. do not expressly disclose a non-exchangeable print head comprising the ink cartridge mount; or

that the mutually different combinations of inks are available through replacement of at least one of the ink tanks with another ink tank containing different type of ink.

However, Saijo discloses a non-exchangeable print head (recording head; col. 22, lines 34-40) comprising an ink cartridge mount (carriage 2) that can mount one or more ink cartridges thereon (col. 7, lines 35-38 and Fig. 1), the one or more ink cartridges having ink tanks (tank) each containing ink to be supplied to each of the nozzle groups (col. 7, lines 35-38);

wherein the printing apparatus can use a first ink set (the ink set of Fig. 2) and a second ink set (the ink set of Fig. 3) that have mutually different combinations of available inks through

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replacement of at least one of the ink tanks with another ink tank containing different type of ink (col. 7, lines 61-65);

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize a non-exchangeable print head and making the ink sets available through replacement of ink tanks into the invention of Takahashi et al. The motivation for doing so, as taught by Horiike (US 5805184), is so that only the tank needs to be replaced when it runs out of ink (col. 10, lines 22-35).

Regarding claims 2, 10, and 19:

Takahashi et al. also disclose that the first bi-directional print mode and the second bi-directional print mode are bi-directional color printing modes (col. 16, lines 4-7, 61-63).

Regarding claims 3 and 11:

Takahashi et al. also disclose a test pattern generator (printer driver) that generates a test pattern (adjustment pattern) to be printed (col. 45, lines 26-31 and col. 49, lines 41-49);

wherein the test pattern can be used to test misalignments of the dot forming positions (col. 45, lines 32-35); and

a position adjustment value setter (e.g. menu) that allows a user to set the position adjustment to be stored in the position adjustment value storage (col. 45, lines 48-52),

wherein the test pattern generation unit can generate a test pattern suitable for the first bi-directional print mode and a test pattern suitable for the second bi-directional print mode (col. 43, lines 23-28).

Regarding claims 8 and 16:

Takahashi et al. also disclose that the position adjuster outputs a warning when the position adjustment value storage does not store the position adjustment value for the bi-

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directional print mode used by the printing apparatus (col. 45, lines 6-20; note that when the optical sensor fails, the position adjustment value is not stored).

Regarding claim 17:

Takahashi et al. as modified by Saijo disclose all the limitations of claim 1 that apply to claim 17, and Takahashi et al. also disclose a computer program product on a computer-readable medium that perform the method of bi-directional printing (col. 49, lines 50-59).

Regarding claim 18:

Takahashi et al. as modified by Saijo disclose all the limitations of claim 1 that apply to claim 18, and Takahashi et al. also disclose storing a first plurality of position adjustment values (coarse and fine adjustment values) associated with the first bi-directional print mode and a second plurality of position adjustment values associated with the second bi-directional print mode (col. 12, lines 39-45, 59-64).

Regarding claim 20:

Takahashi et al. also disclose printing a test pattern using the first plurality of position adjustment values (col. 12, lines 39-45 and col. 35, lines 45-52); and

selecting a first position adjustment value according to the printed test pattern (col. 35, lines 61-67).

Regarding claim 24:

Takahashi et al. also disclose selecting a second position adjustment value (fine adjustment value) when no first position adjustment value (coarse adjustment value) is stored (col. 46, lines 5-10); and

selecting a first position adjustment value when no second position adjustment value is stored (col. 45, lines 36-67, 62-65).

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Regarding claim 25:

Takahashi et al. also disclose outputting a warning (occurrence of error) when no first position adjustment value is stored or when no second position adjustment value is stored (col. 45, lines 6-20; note that when the optical sensor fails, the position adjustment value is not stored).

Claims 4, 12, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. as modified by Saijo, as applied to claims 3 or 11 above, and further in view of Ohtsuka et al. (US 6145950).

Regarding claims 4 and 12:

Takahashi et al. as modified by Saijo disclose all the limitations of claims 3 or 11, and **Takahashi et al. also disclose** that the test pattern generator generates the test pattern suitable for the bi-directional print mode selected via the position adjustment value setter (col. 43, lines 23-28); and

a selected bi-directional print mode is subject to setting of the position adjustment value out of the plurality of available bi-directional print modes (col. and col. 43, lines 33-41).

Takahashi et al. as modified by Saijo do not expressly disclose that the ink cartridges comprise a memory that stores information including types of contained inks;

that the printing apparatus comprises a reader for reading out information stored in the memory; or

that the position adjustment setter displays a plurality of bi-directional print modes available to the printing apparatus based on information read out by the reader and allow a

user to select a bi-directional print mode to be subject to setting of the position adjustment value out of the plurality of available bi-directional print modes.

However, Ohtsuka et al. disclose ink cartridges that comprise a memory (electrical pads 1-3) that stores information including types of contained inks (ID information);

a printing apparatus that comprises a reader (contact 71) for reading out information stored in the memory (col. 9, lines 1-6); and

displaying a plurality of bi-directional print modes available to the printing apparatus based on information read out by the reader (col. 21, lines 22-26, 44-45) and allow a user to select a bi-directional print mode (col. 21, lines 45-48).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize cartridges with memories to determine the available print modes into the invention of Takahashi et al. as modified by Saijo. The motivation for doing so, as taught by Ohtsuka et al., is to produce a high-quality image by using a print mode in accordance with the type of ink (col. 5, lines 8-11).

Regarding claims 5 and 13:

Takahashi et al. as modified by Saijo disclose all the limitations of claim 9, and Takahashi et al. also disclose a position adjustment value setter (controller 100) that sets the position adjustment value based on the print mode (col. 43, lines 33-41).

Takahashi et al. as modified by Saijo do not expressly disclose that the ink cartridge comprises a memory that stores information used to set the position adjustment value; and the printing apparatus further comprises:
a reader that reads out the information from the memory; and
setting a print mode based on the information read out from the memory.

However, Ohtsuka et al. disclose an ink cartridge (ink cartridge 1) that comprises a memory (electrical pads 1-3) that stores information (ID information) used to set the position adjustment value (col. 7, lines 62-64); and

the printing apparatus further comprises:

a reader (obvious to Fig. 1) that reads out the information from the memory (col. 9, lines 1-6); and

setting a print mode based on the information read out from the memory (col. 21, lines 22-26).

Claims 6, 7, 14, 15, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. as modified by Saijo, as applied to claims 1, 9, or 18 above, and further in view of Fuse (US 5539434).

Regarding claims 6 and 14:

Takahashi et al. as modified by Saijo disclose all claimed limitations except that the position adjuster uses a preset standard value when the position adjustment value storage does not store the position adjustment value for the bi-directional print mode used by the printing apparatus.

However, Fuse discloses using a preset standard value (default values) when the position adjustment value storage does not store the position adjustment value for the print mode used by the printing apparatus (col. 10, line 66 - col. 11, line 16 and Fig. 7).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize preset standard values when the position adjustment value storage does not store the position adjustment value into the invention of Takahashi et al. as modified by Saijo. The

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motivation for doing so, as taught by Fuse, is so that all of the nozzles may be used, which will allow printing operations with high efficiency (col. 11, lines 17-22).

Regarding claims 7 and 15:

Takahashi et al. as modified by Saijo disclose all claimed limitations except that the position adjuster uses the position adjustment value for another bi-directional print mode when the position adjustment storage does not store the position adjustment value for the bi-directional print mode used by the printing apparatus.

However, Fuse discloses using the position adjustment value (default values) for another bi-directional print mode when the position adjustment storage does not store the position adjustment value for the bi-directional print mode used by the printing apparatus (col. 10, line 66 – col. 11, line 16 and Fig. 7 show that the default values are used for any print mode; thus the default values are used for another print mode).

Regarding claim 23:

Takahashi et al. as modified by Saijo disclose all claimed limitations except that selecting a first position adjustment value comprises selecting a preset standard value.

However, Fuse discloses that selecting a first position adjustment value comprises selecting a preset standard value (default value; col. 10, line 66 – col. 11, line 16 and Fig. 7).

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. as modified by Saijo, as applied to claim 18 above, and further in view of Ohtsuka et al. (US 6145950).

Regarding claims 21 and 22:

Takahashi et al. as modified by Saijo and Ohtsuka disclose all the limitations of claims 12 and 18 that apply to claim 21, and Takahashi et al. also disclose that the first ink set is contained in a first cartridge and the second ink set is contained in a second cartridge (col. 42, lines 52-66 and col. 15, lines 50-55).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. as modified by Saijo, as applied to claim 18 above, and further in view of Fuse (US 5539434).

Regarding claim 23:

Takahashi et al. as modified by Saijo disclose all claimed limitations except that selecting a first position adjustment value comprises selecting a preset standard value.

However, Fuse discloses that selecting a first position adjustment value comprises selecting a preset standard value (default value; col. 10, line 66 – col. 11, line 16 and Fig. 7).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize preset standard values into the invention of Takahashi et al. as modified by Saijo. The motivation for doing so, as taught by Fuse, is so that all of the nozzles may be used, which will allow printing operations with high efficiency (col. 11, lines 17-22).

Response to Arguments

Applicant's arguments with respect to claims 1, 9, 17, and 18 have been considered but are moot in view of the new ground(s) of rejection. Please see the above rejection to Takahashi et al. in view of Saijo, which discloses a non-exchangeable print head including a plurality of nozzles on which a first ink set or a second ink set are mounted, wherein the first ink set and the second ink set have mutually different combinations of ink, wherein the first ink set and the

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second ink set are associated with a first bi-directional print mode and a second bi-directional print mode.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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